



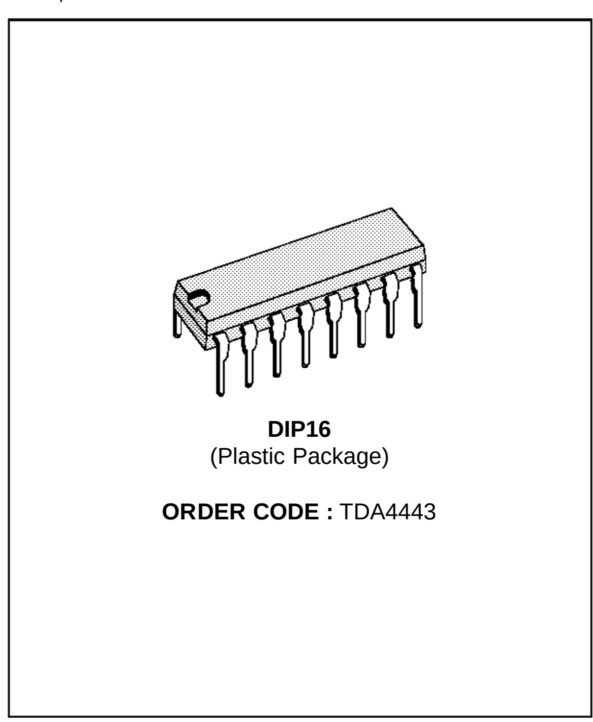
MULTISTANDARD VIDEO IF AMPLIFIER

- SWITCHING OFF THE IF AMPLIFIER WHEN OPERATING IN VTR MODE
- DEMODULATION OF NEGATIVE OR POSITIVE IF SIGNALS. THE OUTPUT REMAINS ON THE SAME POLARITY IN EVERY CASE
- IF AGC AUTOMATICALLY ADJUSTED TO THE ACTUAL STANDARD
- TWO AGC POSSIBILITIES FOR B/G MODE :
  1. GATED AGC
  2. UNGATED AGC ON SYNC. LEVEL AND CONTROLLED DISCHARGE DEPENDENT ON THE AVERAGE SIGNAL LEVEL FOR VTR AND PERI TV APPLICATIONS

  FOR STANDARD L : FAST AGC ON PEAK WHITE BY CONTROLLED DISCHARGE
- POSITIVE OR NEGATIVE GATING PULSE
- EXTREMELY HIGH INPUT SENSITIVITY
- LOW DIFFERENTIAL DISTORTION
- CONSTANT INPUT IMPEDANCE
- VERY HIGH SUPPLY VOLTAGE REJECTION
- FEW EXTERNAL COMPONENTS
- LOW IMPEDANCE VIDEO OUTPUT
- SMALL TOLERANCES OF THE FIXED VIDEO SIGNAL AMPLITUDE
- ADJUSTABLE, DELAYED AGC FOR PNP TUNERS

DESCRIPTION

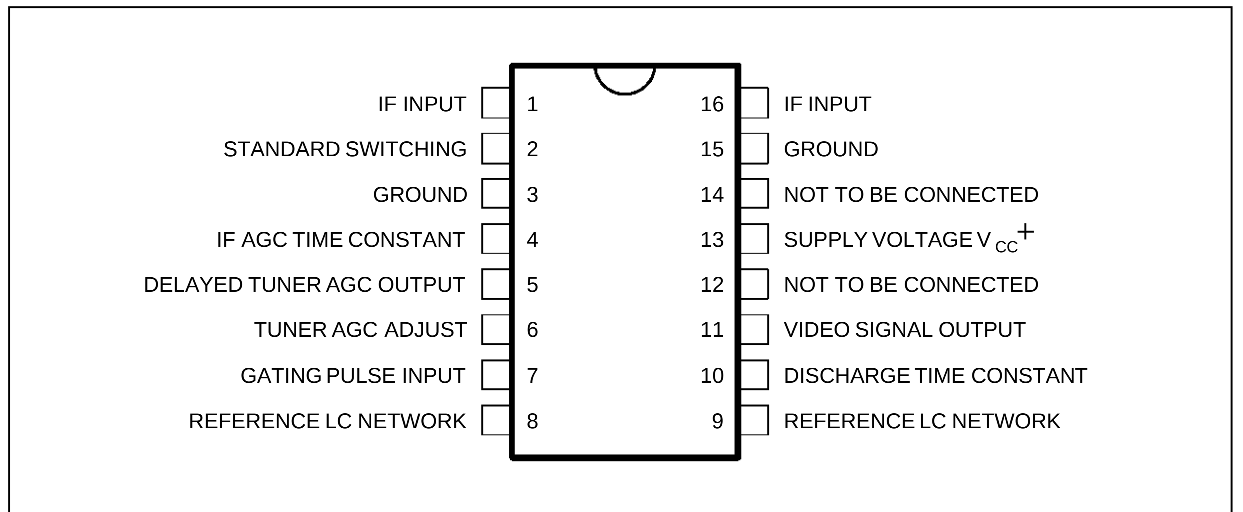
The TDA4443 is a Video IF amplifier with standard switch for multistandard colour or monochrome TV sets, and VTR's.



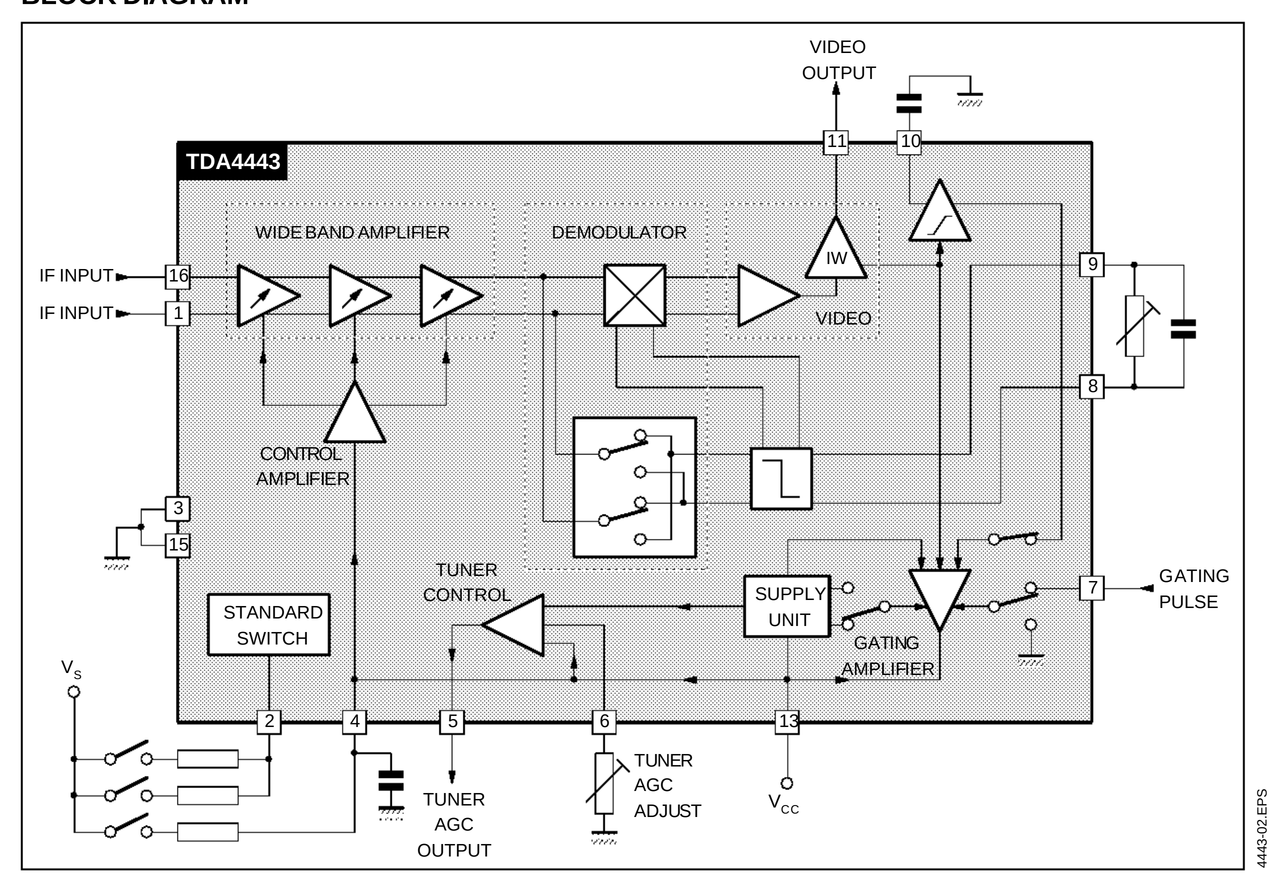
DIP16
(Plastic Package)

ORDER CODE : TDA4443

PIN CONNECTIONS



BLOCK DIAGRAM



GENERAL DESCRIPTION

This video IF processing circuit integrates the following functional blocks :

- Three symmetrical, very stable, gain controlled wideband amplifier stages - without feedback by a quasi-galvanic coupling.
- Demodulator controlled by the picture carrier
- Video output amplifier with high supply voltage rejection
- Polarity switch for the video output signal
- AGC on peak white level
- Gated AGC
- Discharge control
- Delayed tuner AGC
- At VTR Reading mode the video output signal is at ultra white level

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage RangePin 13	15	V
V_0	Open Loop Voltage Pin 5	max. V_{CC}	V
V_{ext}	External Voltage Pin 4	12	V
I_4	Control Current for VTR Mode Pin 4	0.3	mA
I_2	Control Current for Standard Mode Pin 2	0.5	mA
I_0	Max. Video Output Current Pin 11	5	mA
I_0	Short Circuit Current (t ≤ 1sec) Pin 11	30	mA
P_{tot}	Power Dissipation	1	W
T_j	Junction Temperature	125	^oC
T_{AMB}	Ambient Temperature Range	0 to +70	^oC
T_{stg}	Storage Temperature Range	-25 to +125	^oC

4443-01.TBL

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction-ambient Thermal Resistance	70	$^oC/W$

4443-02.TBL

ELECTRICAL OPERATING CHARACTERISTICS

$T_{AMB} = 25^oC$, $V_{CC} = 12V$, unless otherwise spacified. Test Circuit Page 5.

Symbol	Parameter	Pin	Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	13	10	12	15	V
I_{CC}	Supply Current (V_{CC} = 12V, V_4 = 3.5V, V_{IN} = 0) Pin 6, PIn 7, PIn 2 open	13		55	75	mA
V_{11}	Ultra White Level at Standard B/G V_{CC} = 15V, V_4 = 3.5V	11	4.8	5.1	5.6	V
V_{AA}	Ultra Black Clamping Level at Standard B/G SIGNAL 1	11	1.70	1.85	2.10	V
V_O	Picture to sync. output voltage of the video signal without load in standard B/G (residual carrier 10%) SIGNAL 1	11	2.6	2.9	3.3	V_{PP}
V_O	Picture to blanking level output voltage of the video signal without load in standard L (blanking level at 28%of carrier amplitude) SIGNAL 2 (residual carrier 5%)	11	1.80	2.1	2.40	V_{PP}
$\frac{\Delta(V_p - V_{blank})}{V_p - V_{blank}}$	Output voltage change of the picture to blanking level from standard L to standard B/G (mode BG : signal 1, mode L : signal 2)	11			10	%
ΔVblack	Supply voltage influence on the ultra black level in standard B/G	11		0.5		%V
ΔVwhite	Supply voltage influence on the ultra white level in standard B/G	11		1		%V
ΔVvideo	Video Bandwidth Video Signal Attenuation with V_{IN} at 4.43MHz	11		1	1.5	dB
Bvideo	Video Bandwidth at -3dB	11	6			MHz
ΔVvideo	Video frequency response changes witin the AGC range	11		0.5	2.0	dB
I_O	DC Output Current (V_{11} = 10V, V_{CC} = 15V)	11		1.5	2	mA
I_7	Gating Pulse Current	7	0.30		1.0	mA
V_7	DC Voltage at Gating Input	7		1.3	1.6	V
V_1	Input Voltage Sensitivity V_{IN} (with V_{OUT} = V_O - 3dB) Standard B/G SIGNAL 1	1-16		120		μV_{RMS}
I	Control Current for Status B (see status of mode switching) V_2 = 5V	2		10	40	µA

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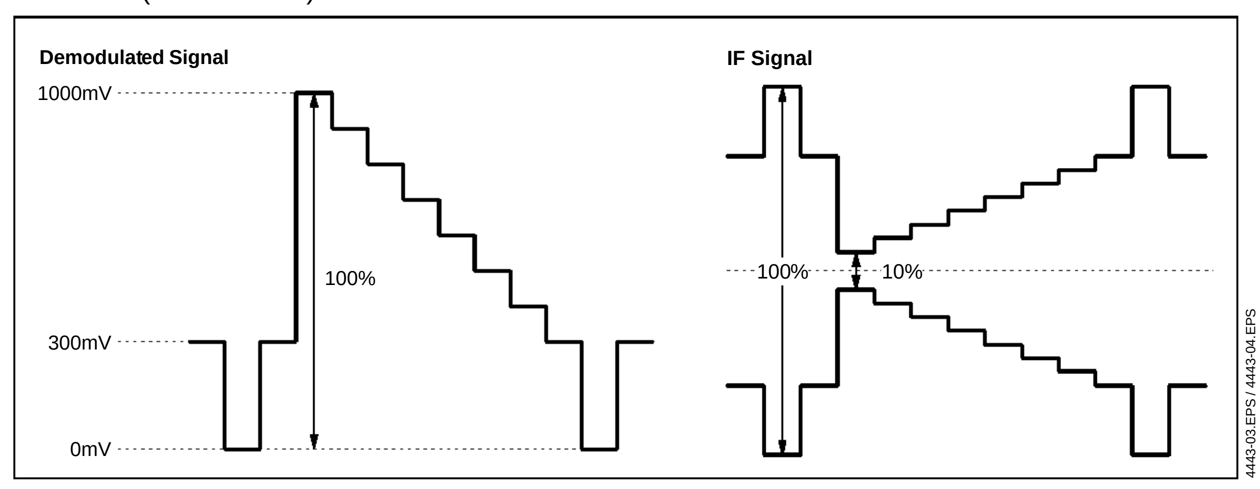
ELECTRICAL OPERATING CHARACTERISTICS (continued)

T_{AMB} = 25°C, V_{CC} = 12V, unless otherwise spacified. Test Circuit Page 5.

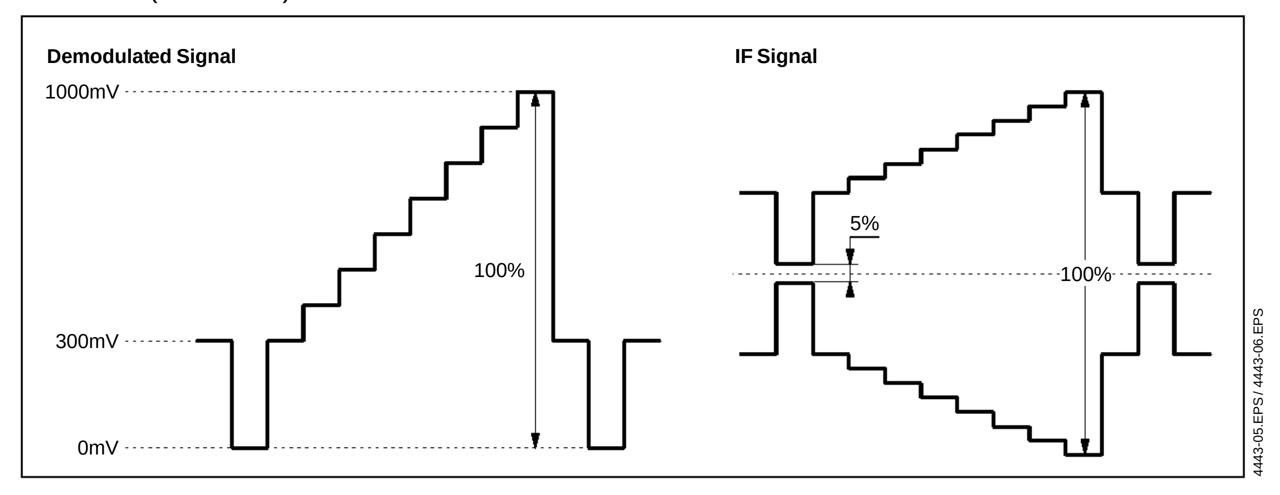
Symbol	Parameter	Pin	Min.	Typ.	Max.	Unit
I	Control Current Status C (see status of mode switching) - V_2 = 6.3V	2		60	400	µA
ΔG_{IF}	IF AGC Range			60		dB
I_{AGC}	Available Tuner AGC Current (10dB above the AGC starting point)	5	8	12		mA
ΔAGC	Delay Between Tuner AGC and IF AGC (pin 6 not connected)	5		50		dB
VIF V2IF	IF residual carrier at the video o/p withing the AGC range 38.9MHz 77.8MHz	11 11		20 50		mV_{RMS} mV_{RMS}
d	Differential Distortion on Composite VIdeo Signal Amplitude SIGNAL 3	11			5	%
aM	Attenuation of sound to color carrier intermodulation signal (1.07MHz) referred to the demodulated color carrier : PIcture Carrier = 0dB, Color Carrier = -6dB, Sound Carrier = -24dB	11		50		dB
$\frac{\Delta Sync}{Sync}$	Sync. Pulse Compression within the IF AGC Range			3		%
RI CI	Input Impedance : Resistance Capacitance	1-16 1-16		2.5 2		kΩ pF
V	Switch off Control Voltage for VTR Mode	4	9		10	V
I	Switch off Current for VTR Mode	4			150	µA

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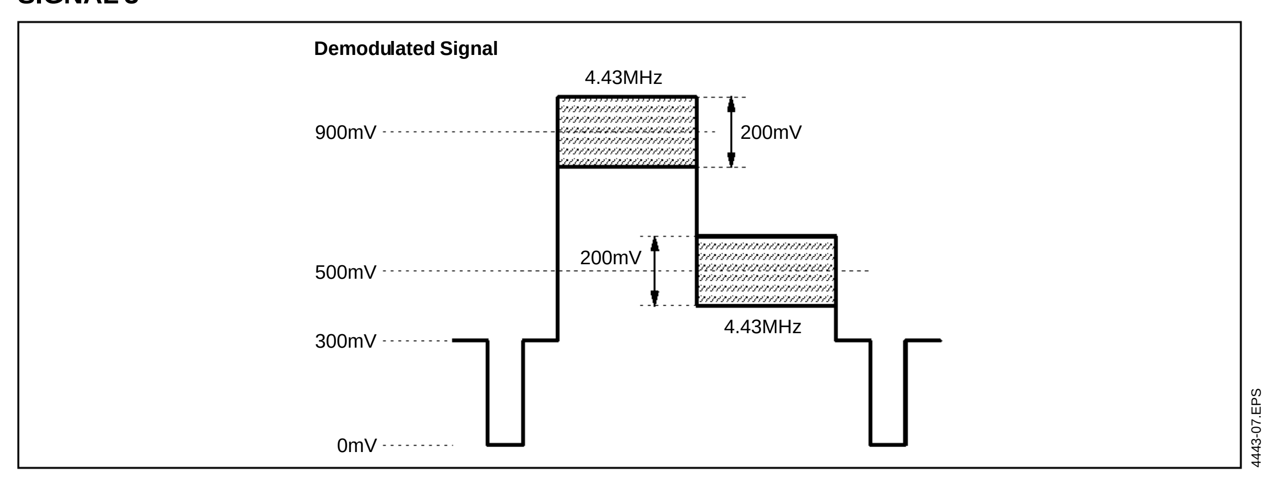
SIGNAL 1 (standard B/G)



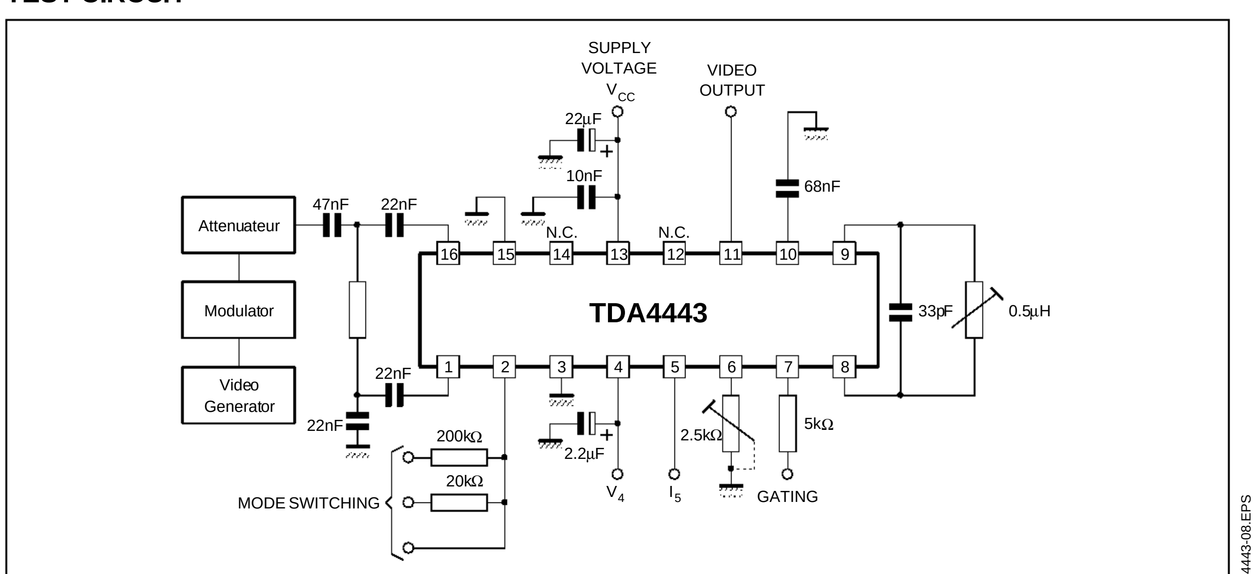
SIGNAL 2 (standard L)



SIGNAL 3



TEST CIRCUIT



DEFINITION OF MODE SWITCHING

Status	Pin 2	Pin 4	Function
A	Not connected	No External Voltage	Standard B/G mode, gated charge and discharge.
B	12V HIgh Impedance	No External Voltage	Standard B/G, ungated, charging up to sync. level, discharging dependant from average signal (peri operation).
C	12V Low Impedance	No External Voltage	At standard L ungated, charging up to peak white level, discharge dependant from average signal level, inverted polarity of the video output.
D	No specifications	≥ 7.5V	In VTR reading mode the IF amplifier is blocked, turned gain controlled down : the video output signal is fixed at constant ultra white level for standard B/G mode.

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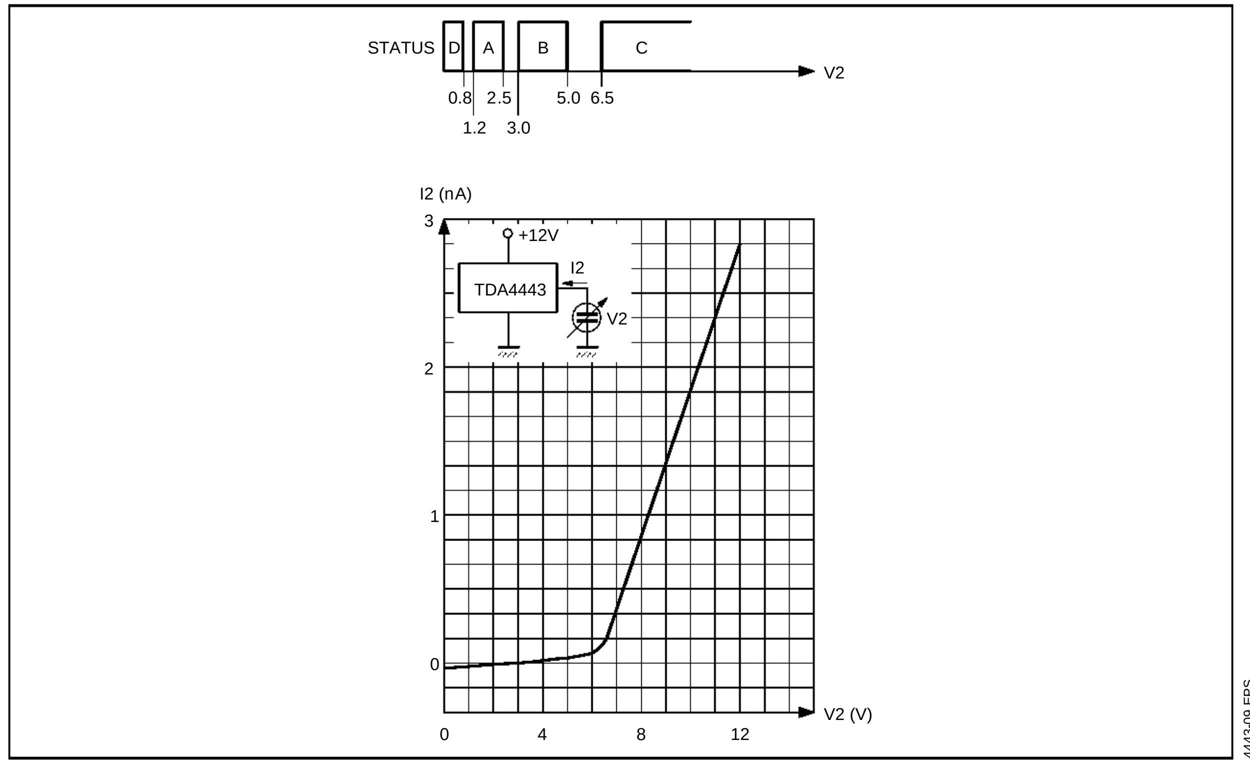
The gating pulse at Pin 7 is internally switched off.

STATUS OF MODE SWITCHING, REFERRING TO CONTROL VOLTAGE PIN 2

Control Voltage Pin 2	Connections of Pin 2	Status	Function
1.2 to 2.5V*	Open	A	Standard B/G gated sync. operation
3.0 to 5.0V	High Impedance	B	Standard B/G, no sync., operation
> 6.5V	Low Impedance	C	Standard L
0.0 to 0.8V	Ground	D	Standard L

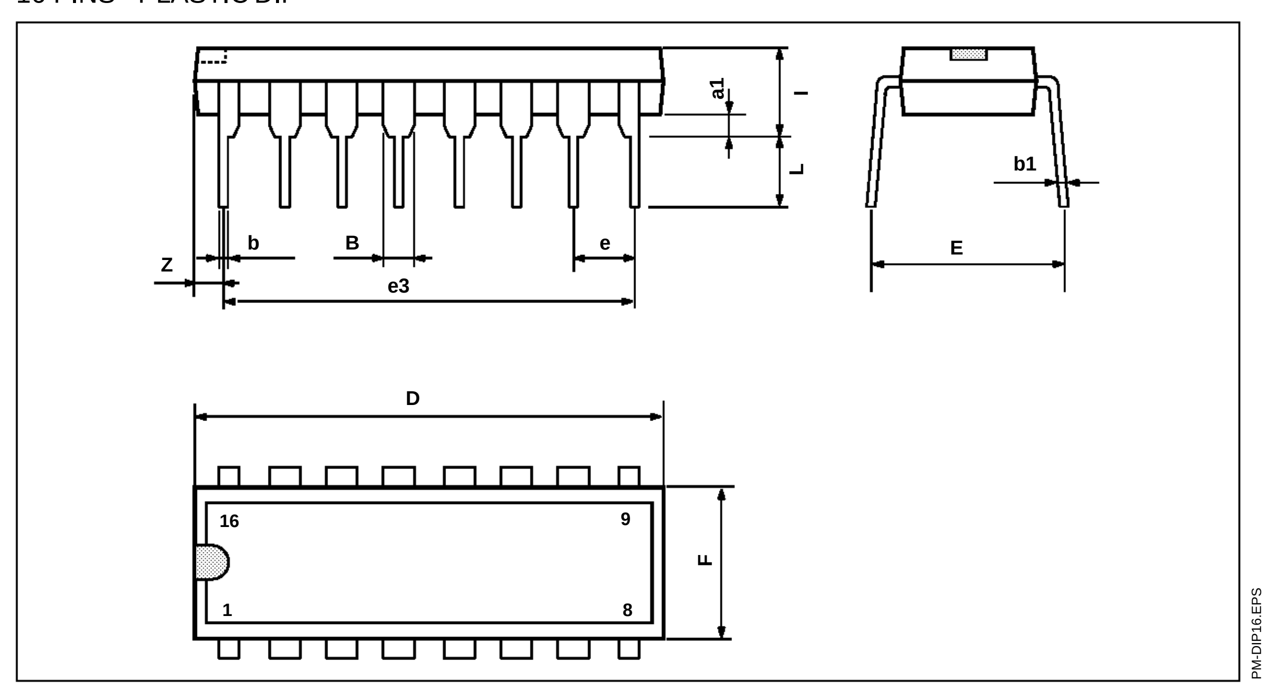
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* Voltage measured on Pin 2.



PACKAGE MECHANICAL DATA

16 PINS - PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
i			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

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